ASSOCIATION BETWEEN KINESIOPHOBIA WITH SELECTED PSYCHOLOGICAL VARIABLES AMONG INJURED ATHLETES OF DIFFERENT GAMES

BY

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CERTIFICATE

I hereby declared that the short synopsis "Association between kinesiophobia with selected psychological variables among injured athletes of different games" being submitted for the degree of doctor of philosophy in physical education to Lakshmi institute of Physical Education, Gwalior during the academic year 2022-23 is a bonafide record of original work carried out under the supervision of Dr. Sanjeev Yadav and has not been submitted in full or part to any university or institute for a degree or diploma.

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ABSTRACT

This research investigates the association between kinesiophobia and selected psychological variables—specifically anxiety and mental toughness—among male university-level athletes who are coping with chronic sports injuries. Kinesiophobia, defined as an excessive and irrational fear of movement due to anticipated pain or reinjury, represents a significant psychological obstacle that can hinder the rehabilitation process, delay return to play, and compromise athletic performance. Despite its clinical relevance, the interplay between kinesiophobia and other psychological factors such as anxiety and mental resilience has not been thoroughly explored in the athletic population.

The study aims to examine whether significant relationships exist between the dimensions of anxiety (somatic anxiety, worry, and concentration disruption) and mental toughness (confidence, constancy, and control) with levels of kinesiophobia among injured athletes from diverse sports disciplines. The research is delimited to male athletes aged 17 to 25 years suffering from chronic injuries, with a sample of 500 participants selected using purposive sampling.

Data will be collected using three validated instruments: the Tampa Scale for Kinesiophobia (TSK), the Sports Anxiety Scale-2 (SAS-2), and the Sports Mental Toughness Questionnaire (SMTQ). Descriptive statistics will summarize the responses, and Pearson's Product Moment Correlation will be employed to analyze the relationships between variables.

It is anticipated that the findings will reveal significant correlations, indicating that higher anxiety levels may be associated with increased kinesiophobia, while greater mental toughness may serve as a protective factor. The outcomes of this research can contribute to a deeper understanding of the psychological dimensions influencing injury rehabilitation, and provide actionable insights for sports psychologists, physical education professionals, coaches, and clinicians in developing tailored intervention strategies that address not only physical but also psychological recovery needs of injured athletes.

Keywords

Kinesiophobia, Sports Injury, Anxiety, Mental Toughness, Chronic Pain, Athlete Rehabilitation, Sports Psychology, Fear of Movement, Performance Recovery, TAMPA Scale

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CHAPTER I

INTRODUCTION

Kinesiophobia is from the greek terms kínēsis (movement) and phobia (fear), or "fear of movement." Medically, it's described as, "an excessive, irrational, and debilitating fear of physical movement and activity resulting from a feeling of vulnerability due to painful injury or reinjury." [1]

Fear of movement may not seem like that serious of an issue, but it can dramatically slow recovery time from injuries and can actually lead to chronic pain and permanent disability if not addressed.

Kinesiophobia can cause long-term problems because it creates a feedback loop in your body: you first feel pain, and that makes it painful to move. You then limit your body's movement to avoid pain, but restricting movement creates poor circulation to the injured area and atrophied muscles from lack of use.

Since problems like back pain are often caused by weak or imbalanced core muscles, immobility causes these muscles to become even weaker and often leads to postural or gait changes that create further problems.

Fear of movement creates a negative cycle of further pain, further fear, and chronic pain.

It is fairly common for people in pain to avoid rehabilitative exercises out of a reluctance to endure the discomfort that it entails, but when this avoidance becomes pathological, it is labeled as kinesiophobia. Many people with chronic pain conditions develop this kind of avoidance behavior in an effort to minimize exposure to additional pain or re-injury.

Kinesiophobia is most commonly found among patients with long-term pain conditions like lower back pain in which movement can produce potent pain symptoms or even re-aggravate an injury. In most circumstances, although there is a reasonable chance of pain, there is only minimal risk of worsening an existing injury or condition. That is why kinesiophobia is defined as an excessive or irrational fear of movement.

One of the most common tools for diagnosing and evaluating the level of kinesiophobia is the Tampa Scale of Kinesiophobia or TSK. The TSK consists of 17 self-reporting questions that assess levels of fear, pain catastrophizing and disability. Your physician or physical therapist will compile the answers and determine the severity of your kinesiophobia.

The Effects of Kinesiophobia

Kinesiophobia may produce a wide variety of physical and psychological effects. The nature and severity of these conditions may depend on a variety of factor including intensity of pain symptoms, duration of pain condition, and access to effective physical therapy.

Among the possible outcomes of untreated kinesiophobia are the following

Limited range of motion—because kinesiophobia sufferers are unwilling to engage in stretching and strengthening exercises, they often exhibit less range of motion than comparable chronic pain sufferers.

Distorted motor coordination—many people who fear certain kinds of movement may compensate by adopting an altered motion. This may produce unconventional strain on joint tissue and muscles which can lead to secondary pain or health conditions.

Pain catastrophizing—one of the greatest challenges in treating kinesiophobia is mitigating symptom intensification. Because the neural pathways that govern fear and pain overlap, fear of pain can make even modest stimuli feel much worse than they actually are.

Diminished quality of life—due to an almost paralyzing fear of movement, many kinesiophobia sufferers are greatly limited in their ability to perform even the simplest of activities. Limited functionality often leads to diminished independence and even disability which can severely impact quality of life.

Greater pain—despite trying to avoid more pain by limiting movement, kinesiophobia sufferers often experience more pain due to disuse and disability. Joints and muscles may atrophy and stiffen, making even everyday movements more difficult and painful. This disuse may lead to painful secondary health issues or even re-injury.

Sports psychology is the study of psychological factors that influence athletic performance and how participation in sports and exercise can affect the psychological and physical well-being of athletes. Researchers in this field explore how psychology can be used to optimize athletic performance and how exercise can be utilized to improve mood and lower stress levels.

Sports psychologists teach cognitive and behavioral strategies to help athletes improve their experiences, athletic performance, and mental wellness when participating in sports.

They can assist with performance enhancement, motivation, stress management, anxiety control, or mental toughness. They also can help with injury rehabilitation, team building, burnout, or career transitioning.

Sports psychologists don't just work with athletes. They can work with coaches, parents, administrators, fitness professionals, performers, organizations, or everyday exercises to demonstrate how we can utilize exercise, sport, and athletics to enhance our lives and psychological development.

Self-confidence is an attitude about your skills and abilities. It means you accept and trust yourself and have a sense of control in your life. You know your strengths and weakness well, and have a positive view of yourself. You set realistic expectations and goals, communicate assertively, and can handle criticism.

On the other hand, low self-confidence might make you feel full of self-doubt, be passive or submissive, or have difficulty trusting others. You may feel inferior, unloved, or be sensitive to criticism. Feeling confident in yourself might depend on the situation. For instance, you can feel very confident in some areas, such as academics, but lack confidence in others, like relationships.

Having high or low self-confidence is rarely related to your actual abilities, and mostly based on your perceptions. Perceptions are the way your think about yourself and these thoughts can be flawed.

Low self-confidence might stem from different experiences, such as growing up in an unsupportive and critical environment, being separated from your friends or family for the first time, judging yourself too harshly, or being afraid of failure. People with low self-confidence often have errors in their thinking.

Attention control, colloquially referred to as concentration, refers to an individual's capacity to choose what they pay attention to and what they ignore. It is also known as endogenous attention or executive attention. In lay terms, attention control can be described as an individual's ability to concentrate. Primarily mediated by the frontal areas of the brain including the anterior cingulated cortex, attention control is thought to be closely related to other executive functions such as working memory.

Imagination can be defined as the image in action inside your head whereas visualization is all about visuals in your inward eye. The latter is possible when some instances have already occurred in your life or if you have the image in your mind.

Motivation is the reason for which humans and other animals initiate, continue, or terminate a behavior at a given time. Motivational states are commonly understood as forces acting within the agent that create a disposition to engage in goal-directed behavior. It is often held that different mental states compete with each other and that only the strongest state determines behavior. This means that we can be motivated to do something without actually doing it. The paradigmatic mental state providing motivation is desire. But various other states, such as beliefs

about what one ought to do or intentions, may also provide motivation. Motivation is derived from the word 'motive', which denotes a person's needs, desires, wants, or urges. It is the process of motivating individuals to take action in order to achieve a goal.

Attitude is a psychological construct that is a mental and emotional entity that inheres or characterizes a person, their attitude to approach to something, or their personal view on it. Attitude involves their mindset, outlook and feelings. Attitudes are complex and are an acquired state through life experience. Attitude is an individual's predisposed state of mind regarding a value and it is precipitated through a responsive expression towards oneself, a person, place, thing, or event (the attitude object) which in turn influences the individual's thought and action.

Anxiety is a feeling of fear, dread, and uneasiness. It might cause you to sweat, feel restless and tense, and have a rapid heartbeat. It can be a normal reaction to stress. For example, you might feel anxious when faced with a difficult problem at work, before taking a test, or before making an important decision. It can help you to cope. The anxiety may give you a boost of energy or help you focus. But for people with anxiety disorders, the fear is not temporary and can be overwhelming.

Worry refers to the thoughts, images, emotions, and actions of a negative nature in a repetitive, uncontrollable manner that results from a proactive cognitive risk analysis made to avoid or solve anticipated potential threats and their potential consequences.

Worry is a category of perseverative cognition, i.e. a continuous thinking about negative events in the past or in the future. As an emotion "worry" is experienced from anxiety or concern about a real or imagined issue, often personal issues such as health or finances, or external broader issues such as environmental pollution, social structure or technological change. It is a natural response to anticipated future problems. Excessive worry is a primary diagnostic feature of generalized anxiety disorder, but also is pervasive in other psychological disorders like schizophrenia.

Somatic anxiety, also known as somatization, is the physical manifestation of anxiety. It is commonly contrasted with *cognitive anxiety*, which is the mental manifestation of anxiety, or the specific thought processes that occur during anxiety, such as concern or worry. These different components of anxiety are especially studied in sports psychology, specifically relating to how the anxiety symptoms affect athletic performance.

"Symptoms typically associated with somatization of anxiety and other psychiatric disorders include abdominal pain, dyspepsia, chest pain, fatigue, dizziness, insomnia, and headache."[1] These symptoms can either happen alone or multiple can happen at once.

Although commonly overlooked, scientists are starting to study somatic anxiety more.[3] Studies have shown that some medically overlooked cases that could not relate physical pain to any type of organ dysfunction typically could have been somatic anxiety.

STATEMENT OF THE PROBLEMS

To find out the relationship between kinesiophobia and selected psychological variables among injured athletes.

OBJECTIVES OF THE STUDY

1. To find out, whether there would be any significant relationship between kinesiophobia and anxiety.
2. To find out, whether there would be any significant relationship between kinesiophobia and mental toughness.

DELIMITATION

The delimitations of the study would be for the following factors -

1. The study would be delimited on male athletes.
2. The study would be delimited on athletes suffering from chronic injury.
3. The study would be delimited on the following psychological variable given below – Kinesiophobia , anxiety, mental toughness.
4. The selected samples would be delimited to age between 17 to 25.

HYPOTHESIS

1. There would be a significant relationship between kinesiophobia with the dimensions of the anxiety.
2. There would be a significant relationship between kinesiophobia with the dimensions of the mental toughness.

DEFINIATION AND EXPLANATION OF TERMS

KINESIOPHOBIA

Kinesiophobia is defined as an excessive irrational and debilitating fear of movement or physical activity. The fear of motion is associated with a feeling of vulnerability to injury in response to movement. The advancement of acute pain to persistent and chronic pain occurs as a result of decreased use of the painful area due to fear of increase in pain as a result of movement.

MENTAL TOUGHNESS

"Mental toughness" is frequently used colloquially to refer to any set of positive attributes that helps a person to cope with difficult situations.

ANXIETY

Anxiety may be defined as apprehension, tension, or uneasiness that stems from the anticipation of danger, which may be internal or external.

SELF CONFIDENCE

Self-confidence is a term that appears in many contexts, from improving mental health to helping people meet business goals and more. Self-confidence is more than a buzz word; it's a genuine concept linked to mental health, wellbeing, and a positive way of being in the world. Self-confidence includes both feeling and doing.

NEGATIVE ENERGY

We may not have the technology to measure it, but you probably know what negative energy feels like. It can come from negative people, from your surroundings, or from your own psyche. It can leave you exhausted both mentally and physically. Negative energy perpetuates itself, therefore, breeding more negativity. Learning to deal with negative energy is important for your health and happiness.

VISUAL AND IMAGERY CONTROL

Mental imagery that involves the sense of having pictures in the mind . Such images may be memories of earlier visual experiences or syntheses produced by the imagination (e.g., visualizing a pink kangaroo)

MOTIVATION LEVEL

Motivation is the process that initiates and maintains certain behaviors needed to achieve goals. It is the driving force behind every action and is often used to describe why someone does anything.

POSITIVE ENERGY

Positive energy refers to an attitude that is encouraging, productive, and beneficial. People who exhibit this positive energy often do so by: Being kind and generous .Believing that good things will happen in line with the law of attraction .Engaging in positive self-talk.

ATTITUDE CONTROL

Attitude is a psychological construct that is a mental and emotional entity that inheres or characterizes a person, their attitude to approach to something, or their personal view on it. Attitude involves their mindset, outlook and feelings.

SIGNIFICANCE OF THE STUDY

1. The study would be helpful to know the aspect of kinesiophobia among athletes.
2. To study would be helpful to understand the relationship between kinesiophobia with anxiety and kinesiophobia with mental toughness.
3. The study would be helpful in the analysis of athlete's psychological state of mind suffering with chronic injury.
4. The study would be helpful to apply therapeutic modalities for the athletes suffering from kinesiophobia.
5. The study would be helpful for physical education teachers and coaches to deeply understand the concept of kinesiophobia.

REVIEW OF RELATED LITERATURE

(Jenna McCaffrey,2023) Kinesiophobia is known as the fear of movement, injury, or re-injury. It is the primary psychological construct of the Fear Avoidance Model of Chronic Pain under the biopsychosocial model's umbrella. This study tested the effects of kinesiophobia on return to play of athletes at Bridgewater College. Results found that kinesiophobia had no impact on return to play of female athletes at Bridgewater College. Male athletes have a positive correlation between Return Concerns and kinesiophobia.

(Houston et al., 2014) Unrecognized and unaddressed injury-related fears may hinder the rehabilitation process in injured athletes. Currently, 3 scales have been reported to measure injury-related fears in general orthopedic patient populations: the Tampa Scale of Kinesiophobia-11 (TSK-11), the Fear-Avoidance Beliefs Questionnaire (FABQ), and the Re-Injury Anxiety Inventory (RIAI). However, these instruments have not been studied extensively in athletes with musculoskeletal injuries. The purpose of this case series was to describe changes in injury-related fear in intercollegiate and interscholastic athletes with acute musculoskeletal injuries. Twenty-six athletes completed the 3 questionnaires at 48 hours, 1 week, and 3 weeks postinjury. Responses to all 3 questionnaires and their subscales, except for the RIAI-Rehab subscale, changed significantly over the course of the study. In addition, significant correlations were found among most measures, as each appears to be measuring different constructs of the same phenomena. Following acute musculoskeletal injury, injury-related fear scores decreased as the athletes' condition improved.

(Razumets, 2021) The article presents a study of traumatic experiences by high-class athletes (members of the Russian national teams). Data on the subjective sensations of athletes who have suffered from injury of the musculoskeletal system are obtained, patterns in the perception of the consequences of an injury event are revealed. Also we present data on the attitude of athletes to injury in the aspect of professional activity. The analyzed information is an important component in the development of personalized programs for the prevention of reinjury in elite sports. Objective: to assess the psychoemotional experiences of sports trauma by elite athletes in the

process of rehabilitation treatment after the musculoskeletal system injury .Materials and methods: a specially developed medical and psychological interview was conducted with athletes-members of the sports national Russian Federation teams, who are inpatient treatment in the sports traumatology department, in order to obtain primary subjective information from the athlete about his presentation of his own experiences of a traumatic episode. Further, the information obtained from the interviews was analyzed and grouped for further evaluation. Results: we state the significant influence exerted by the previous traumatic experience on the future life and professional activity of an athlete. Moreover, the influence can be both negative (fear, anxiety, kinesiophobia, uncertainty in sports-specific movements) and positive (acquired skills of coping with traumatic experiences, gaining new knowledge about one's physical and psychological capabilities).Conclusions: thus, despite the diversity of individual reactions of athletes to injury, different life situations, sports and traumatic events, it is possible to identify general patterns in the perception of elite athletes of the injury itself, as well as the entire process of recovery and return to sports. This information is very important both for minimizing the negative impact of a sports injury on the psychological recovery of an athlete by switching his attention to identifying the "positive" consequences of the injury, and for the prevention of repeated injuries in elite sports.

(Sims & Mulcahey, 2018) Recent literature has focused on the psychological aspects associated with recovery that may affect outcomes following anterior cruciate ligament (ACL) reconstruction. Psychological factors such as self-efficacy, locus of control, athletic identity, and fear of reinjury have been shown to impact the recovery and rehabilitation process. Men and women display different psychological responses to injury; men report greater self-efficacy postoperatively and a loss of overall self-worth with injury, whereas women are self-directed and exhibit greater anxiety concerning an injury's impact on their lives and a loss of physical self-worth with injury. Preoperative identification of sex-specific psychological factors that are known to affect return to sport following ACL reconstruction may contribute to improved return to sport and quality of life.

(Daley et al., 2021) The psychosocial benefits of participating in sports have long been appreciated. However, athletes are often faced with circumstances that make them susceptible to psychological challenges unique to the athletic population. One such circumstance is injury in sport, which can

be a source of notable distress and may precipitate the emergence of new or exacerbation of underlying psychological disorders. In athletes who are injured, particularly those undergoing surgical intervention, psychological factors play a substantial role in the recovery process. A more comprehensive understanding of the complex interplay between psychological and physical health in the setting of an injury is essential to optimize patient care. The aim of this review was to highlight the impact of psychological factors on measurable outcomes after orthopaedic surgical interventions and to explore interventions that can be implemented to improve surgical outcomes and the overall care of injured athletes.

(Herrero et al., 2021) The increase in athletic participation of girls and women over the last half-century has brought into focus the need to better understand the psychology of female athletes. This review explores various non-physical factors that contribute to athletic success, such as resilience, mindfulness and sleep. The role of anxiety and depression in sport-related injury is another key issue that those invested in an athlete's training must be able to recognize and manage. Additionally, disordered eating and the harmful effects of social media affect females differently and at a higher rate than their male counterparts. Lastly, understanding how the female athlete views injury and recovery may allow us to successfully return injured athletes to sport. The goal of this article is to provide an overview of how a female athlete's mental and emotional well-being affect her athletic performance, injury risk and recovery following sports-related injury.

Chapter III

RESEARCH METHODOLOGY

In this chapter, the following procedure will be adopted for selection of subjects, selection of variables, reliability of data, instrument's reliability, subjects' reliability, reliability of tests, criterion measures, and statistical technique employed for the analysis of the data arepresented below.

SELECTION OF THE SUBJECTS

For the purpose of the study 500 athletes of university level and age ranged 17-25 years who will be undergoing with any kind of chronic injury are to be selected as the sample of the study. Selection of the samples will be purposive Sampling.

SELECTION OF THE VARIABLES

1. Kinesiophobia

- The Tampa Scale for Kinesiophobia (TSK)
    1. Activity Avoidance Scale
    2. Somatic Focus Scale

2. Anxiety

- Sports Anxiety Scale-2 (SAS-2)
    1. Somatic
    2. Worry
    3. Concentration Disruption

3. Mental toughness

- Sports Mental Toughness Questionnaire
    1. Confidence
    2. Consistency
    3. Control

CRITERIA OF THE MEASURE

The selected variables will be tested by using the following standardized tests items and they were presented in Table-1.

Table No. 1

Criterion Measures Variables	Author and Year	Scale
Mental Toughness	Sheard, Golby,& Van Wersch 2009	Sports Mental Toughness Questionnaire (SMTQ)
Anxiety	Smith et.al 2006)	Sports Anxiety Scale -2
Kinesiophobia	Vlaeyen, et.al (1995).	The Tampa Scale for Kinesiophobia (TSK)

1. Mental toughness status scale

The Sports Mental Toughness Questionnaire (SMTQ; Sheard, Golby & van Wersch, 2009) was employed to assess athletes' mental toughness. It contains 14 self-report items rated on a four-point Likert scale ranging from "Very true" to "Not at all true." Items 1–8 are positively keyed, whereas Items 9–14 are reverse-scored. Sum scores are calculated for three sub-scales—Confidence (Items 1–6; possible range 6–24), Constancy (Items 7–10; range 4–16) and Control (Items 11–14; range 4–16)—and then aggregated to yield a composite mental-toughness score ranging from 14 to 56, with higher values indicating greater mental toughness. The questionnaire can be administered individually or in groups, either on paper or through a secure online form, and typically requires about three minutes to complete. Standard instructions ask athletes to indicate how true each statement is for them in their usual competitive context; administration should occur in a quiet space free from distractions and without coaches or teammates present. In prior research the SMTQ has demonstrated acceptable internal consistency (composite $\alpha \approx .81$; sub-scales $\alpha \approx .71$–$.80$) and good two-week test–retest reliability ($r \approx .80$), and confirmatory factor analysis supports its three-factor structure. For interpretation, raw scores may be converted to percentiles or z-scores using sport-specific norms where available; in their absence, descriptive categorizations such as low ($\leq$ 25th percentile), below average (26–49th), average (50–74th), and high ($\geq$ 75th) can be reported. Ethical practice requires informed consent, assurances of confidentiality, and the option to withdraw without penalty.

2. Sports Anxiety Scale-2

The subjects will give their response to 15 statements on 3 dimensions of the questionnaire which are Somatic anxiety, Worry and Concentration disruption. The test will monitor the sports anxiety of subjects for the respective sport. There would be no time limit provided for the response and instructions will be clearly given before filling the questionnaire.

For each item one of the four responses to be given (A) Not at all, (B) A Little Bit (C) Pretty Much (D) Very Much. There would be 3 dimensions of the questionnaire at which the responses given will be score as per the criteria given below:

Scoring Key: Somatic: Items 2, 6, 10, 12, 14; Worry: Items 3, 5, 8, 9, 11; Concentration Disruption: Items 1, 4, 7, 13, 15.

3. The Tampa Scale for Kinesiophobia (TSK)

The (TSK) has 17 items, subdivided in two factors (which resulted from factor analysis):

1. Activity Avoidance Scale
2. Somatic Focus Scale

Scoring:

The total score ranges between 17 and 68. A high value on the TSK indicates a high degree of kinesiophobia, and a cut-off score was developed by Vlaeyen (1995), where a score of 37 or over is considered as a high score, while scores below that are considered as low scores. Use of a total score (including all 17 items) is recommended, although practitioners may wish to interpret results using two subscales; - Activity Avoidance - this subscale reflects the belief that activity may result in (re)injury or increased pain. - Somatic Focus - reflects the belief in underlying and serious medical problems Hostility subscale: items 22-29.

The score for each scale is the sum or the ratings for its items. The two items (7 and 18) worded in the direction opposite to aggression are reverse-scored. The total score for aggression is the sum of these scale scores. Higher scores indicate higher aggressive behaviour.

TESTER RELIABILITY

Reliability relates to the consistency of a measurement. The Researcher will look after the different testing procedure, through which data will be collected. After selecting the tests for psychological variables, researcher will practice for scoring of the test items.

Tester reliability will be conducted through test-retest method and obtain consistency of results through product moment correlation. For this purpose, data will be collected on 50 subjects on selected psychological variables.

RELIABILITY OF EQUIPMENT

In the present study, standardized questionnaire will be used to assess the dependent variables. The selected psychological variables will be measured with the standard questionnaires.

STATISTICAL PROCEDURE

The obtained data would be explained through two parts: Descriptive and analytical. For descriptive statistics mean and standard deviation will be used. To examine the correlation between selected psychological variables i.e., Kinsiophobia with dimensions of anxiety and mental toughness of the university athletes, Pearson Product Movement Coefficient Correlation will be used to find out the significance relationship between the variables.

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